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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,898

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Shinji Watanabe

8017-1189

3401

466 7590 02/13/2008

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EXAMINER

LOUIE, WAI SING

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

02/13/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/574,898	WATANABE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Wai-Sing Louie	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 17-28 and 33-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-28 and 33-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/6/06, 11/1/07</u> .                                         | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Applicant's election without traverse of Group I, claims 17-28 and 33-37, in the reply filed on 11/15/07, is acknowledged. The restriction is final.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-25 and 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurita (US Pub. 2002/0135057).

With regard to claims 17-18, Kurita discloses a semiconductor device (¶ [0028] et seq. and fig. 4) comprising:

- A wiring substrate 13 including an insulating resin layer 7 having a first major surface and a second surface 15 and a first wiring layer 14 disposed on the insulating resin layer 7 on the second major surface 15 side (¶ [0031], [0048] and fig. 4);
- A second wiring layer 3 formed on the first major surface of the insulating resin layer 7 (¶ [0031] and fig. 4);

- A chip 1 including a projection electrode 2 on a bottom surface and mounted on the wiring substrate 13 (¶ [0028] and fig. 2), where the insulating resin layer 7 holds the chip 1 such that a bottom and at least a part of side surfaces of the chip 1 are in contact with the insulating resin layer 7 (fig. 4), and a top surface of the chip 1 is exposed on the insulating resin layer 7 on the first major surface 15 side, and where the projection electrode 2 of the chip 1 is connected with the first wiring layer 3 (fig. 4).

With regard to claim 19, Kurita discloses a ground pattern is formed in the second wiring layer 3 (¶ [0036]).

With regard to claims 20-22, Kurita discloses a plurality of insulating resin layers 7 are laminated such that first major surfaces 15 are faced in the same direction for holding chip 1 and they are arranged on both surfaces of the wiring substrate 13 (fig. 3).

With regard to claims 23-24 and 33, in addition to the limitations disclosed in claim 17 above, Kurita also discloses:

- A wiring substrate 13 including a plurality of insulating resin layers 7 that are laminated (fig. 3) and have first major surfaces and second major surfaces 15 and a first wiring layer 14 disposed on the insulating resin layer 7 on the second major surface 15 side from a lowermost layer to an innermost layer in the insulating resin layers 7 (fig. 3);
- A second wiring layer 3 formed on the first major surface of the insulating resin layer 7 (fig. 3)

With regard to claims 25 and 34, Kurita discloses a portion exposed from the insulating resin layer 7 of the chip 1 that enters the insulating resin layer 7 of the outermost layer in the wiring substrate 13 is covered by a coating resin (§ [0008]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26-27 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurita (US Pub. 2002/0135057) in view of Koyama (US Pub. 2001/0053598).

With regard to claims 26 and 35, Kurita does not disclose the projection electrode 2 of the chip 1 having a sharp tip. However, Koyama discloses the electrodes 12 have a sharp tip 13 (Koyama § [0058] and fig. 3). Koyama teaches the sharp tip provides a larger bonding area (Koyama § [0014]). Therefore, it would have been obvious to one of ordinary skill in the art to modify Kurita's device with the teaching of Koyama to provide a projection electrode with a sharp tip in order to have a larger bonding area.

With regard to claims 27 and 36, Kurita modified by Koyama discloses the projection electrode 12 is gold (Koyama § [0056]).

Claims 28 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurita (US Pub. 2002/0135057) in view of Sakamoto et al. (US 6,791,199).

With regard to claims 28 and 37, Kurita does not disclose the insulating resin is thermoplastic or thermosetting resin. However, Sakamoto et al. disclose the insulating resin could be a thermosetting resin (Sakamoto col. 4, lines 50-54). Sakamoto et al. teach the thermosetting resin could be molded, injected, dipped or painted on (Sakamoto col. 7, lines 6-10). Thus, it would have been obvious at the time the invention was made to modify Kurita's device with the teaching of Sakamoto et al. to use a thermosetting resin in order to be easily applied or formed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is 571-272-1709. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wai-Sing Louie/  
Primary Examiner, Art Unit 2814

Wsl  
February 7, 2008.